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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,878	02/11/2004	Heng Liu	101109.0005	6696

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EXAMINER	
LOUIE, WAI SING	
ART UNIT	**PAPER NUMBER**
2814	

DATE MAILED: 05/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/777,878	LIU	
	Examiner	Art Unit	
	Wai-Sing Louie	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) *21-42* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicant's election without traverse of Group I, claims 1-20, in the reply filed on 5/3/05 is acknowledge. It is suggested that non-elected claims 21-42 be canceled in the response to this Office Action.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-2 and 19 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,515,308. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

With regard to claims 1-2 and 19, US 6,515,308 disclose a semiconductor Group III-V nitride compound laser structure comprising:

- Two differently doped semiconductor materials from layer defining a light generating region (claim 1);

- An n-type current spreading layer (n-type oxide) formed upon the n-type layer (claim 1);
- a plurality of n-type layer (claim 4);
- the n-type and p-type layer to define a tunneling diode (claim 1).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Chua et al. (US 6,455,340).

With regard to claim 1, Chua et al. disclose a Group III nitride light-emitting diode (col. 4, line 7 to col. 8, line 21 and fig. 3) comprising:

- Two differently doped semiconductor materials from layer 110 to 118 defining a light generating region (col. 5, lines 16-41 and fig. 3);
- An n-type current spreading layer 108 formed upon the n-type layer 110 (col. 5, lines 10-13 and fig. 3).

With regard to claim 2, in addition to the limitations disclosed in claim 1, Chua et al. also disclose:

- An n-type layer 112 (col. 5, lines 16-19 and fig. 3);
- An n-type layer 110 formed upon the n-type layer 112 and p-type layer 118 (fig. 3).

With regard to claim 3, Chua et al. disclose a substrate 128 upon which the n-type layers 108 to 112 and p-type layers 116 to 120 are formed (fig. 3).

With regard to claim 4, Chua et al. further disclose a substrate 100 upon which the n-type layers 102 to 112 are formed (col. 4, lines 30-38).

With regard to claim 5, Chua et al. further disclose a substrate 128 upon which the p-type layers 116 to 120 are formed (col. 5, lines 37-67 and fig. 3).

With regard to claim 6, Chua et al. disclose the n-type and p-type layers comprise AlInGaN (col. 2, lines 6-15).

With regard to claim 7, Chua et al. disclose the n-type layer 108 comprises GaN (col. 5, lines 12-13).

With regard to claim 13, Chua et al. disclose the current spreading layer and the n-type layers are substantially transparent to at least one wavelength of visible light (fig. 3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 8-12, 14-15, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chua et al. (US 6,455,340) in view of Lee et al. (US 5,717,226).

With regard to claims 8-12, Chua et al. do not disclose the current spreading layer comprises a conductive oxide layer. However, Lee et al. disclose the current spreading layer comprises an indium tin oxide (ITO) or zinc oxide (ZnO) materials (Lee col. 3, lines 31-32). Lee et al. teach the ITO and ZnO have high conductivity to be used as current spreading layer (Lee col. 3, line 30). Chua et al. and Lee et al. have substantially the same environment of light-emitting device having current spreading layer. Therefore, it would have been obvious for the one with ordinary skill in the art to modify Chua's device with the teaching of Lee et al. to provide ITO or ZnO as current spreading layer in order to have high conductivity to spread the current.

With regard to claims 14-15, Chua et al. modified by Lee et al. would have the ITO or ZnO as current spreading layer. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent. Where the claimed and the prior art products are identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 195 USPQ 430, 433 (CCPA 1977). Therefore, the sheet resistivity would be approximately the same.

With regard to claim 18, Chua et al. modified by Lee et al. would disclose the conductive oxide (current spreading) layer is in ohmic contact with n-type layer 108 (fig. 3).

Claims 16-17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chua et al. (US 6,455,340).

With regard to claims 16-17 and 20, Chua et al. disclose the thickness of the n-type layer is less than 100 Å; the thickness of the conductive oxide layer is dividable by the wavelength emitted; and the doping concentration is greater than 10^{19} cm^{-3}. However, the thickness and doping concentration are considered to involve routine optimization, which has been held to be within the level of ordinary skill in the art. As noted in In re Aller, the selection of reaction parameters such as thickness and concentration, etc. would have been obvious:

> "Normally, it is to be expected that a change in temperature, or in thickness, or in time, would be an unpatentable modification. Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art...such ranges are termed "critical ranges and the applicant has the burden of proving such criticality.... More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."
>
> *In re Aller 105 USPQ233, 255 (CCPA 1955). See also In re Waite 77 USPQ 586 (CCPA 1948); In re Scherl 70 USPQ 204 (CCPA 1946); In re Irmscher 66 USPQ 314 (CCPA 1945); In re Norman 66 USPQ 308 (CCPA 1945); In re Swenson 56 USPQ 372 (CCPA 1942); In re Sola 25 USPQ 433 (CCPA 1935); In re Dreyfus 24 USPQ 52 (CCPA 1934).*

Therefore, one of ordinary skill in the requisite art at the time the invention was made would have used any thickness and doping concentration suitable to the method of the process in order to optimize the design.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai-Sing Louie whose telephone number is (571) 272-1709. The examiner can normally be reached on 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WSL
May 5, 2005.